ORIGINAL ARTICLE

A culture of patient safety in nursing homes

N G Castle, K E Sonon

Qual Saf Health Care 2006;**15**:405–408. doi: 10.1136/qshc.2006.018424

See end of article for authors' affiliations

Correspondence to: N G Castle, A640 Crabtree Hall, Graduate School of Public Health, 130 DeSoto Street, Pittsburgh, PA 15261, USA; CastleN@pitt.edu

Received 20 February 2006
Revised 18 July 2006
Accepted 3 August 2006

Background: Few accounts of patient safety initiatives in nursing homes exist.
Objective: To (1) determine safety culture scores for nursing homes and (2) compare these results with existing data from hospitals.
Methods: Data were collected from a nationally representative sample of nursing homes (n = 2840 completed surveys and a response rate of 71%). From these nursing homes, administrators completed The Hospital Survey On Patient Safety Culture (HSOPSC) instrument.
Results: 11 of the 12 HSOPSC subscale scores from the nursing home sample were considerably lower than the benchmark hospital scores. In addition, almost all item scores from nursing homes were considerably lower than the benchmark hospital scores. These results indicate that a less well-developed safety culture exists in nursing homes.
Conclusions: The results clearly show that the patient safety culture scores of nursing homes are considerably lower than those of hospitals. Residents of nursing homes may be at risk of harm as a result of patient safety errors.

Patient safety, defined as ''the prevention of harm caused by errors of commission and omission'',[1] has recently been a topic of priority for various organisations such as the Institute of Medicine,[2] the Leapfrog Group,[3] the Agency for Healthcare Research and Quality,[4] the Institute for Healthcare Improvement[5] and the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO).[6] State-level departments and the federal government's role of overseeing the Centers for Medicare and Medicaid Services have also been striving to promote a good culture of patient safety in healthcare organisations through mandatory or voluntary reporting and the disclosure of patient safety information.[6]

As described by Cooper,[7] no standard definition of culture exists, but a commonly cited, short and intuitive understanding of culture is that it ''is the way things are done around here''. A good safety culture (reflecting the way things are done) is thought to include organisational learning, teamwork, open communication, feedback and non-punitive response to error.[7] The organisations mentioned above have been vocal regarding improvement efforts in many of these areas, and the JCAHO has gone so far as to establish the Joint Commission International Center for Patient Safety (http://www.jcipatientsafety.org/), as well as annual national patient safety goals. The annual goals are listed by the type of organisation (eg, hospital, long-term care facility, behavioural health, etc) and are most commonly related to falls, medication errors, resident or patient identification, care giver communication and healthcare-associated infections.

Although the patient safety goals established by the JCAHO deal with broad issues, differences in patient safety may exist between nursing homes and hospitals. Firstly, care practices and patients differ between these settings—for example, a hospital setting can serve all age groups, monitor and attempt to lower the average length of stay, emphasise technology and place a high value on the JCAHO accreditation, whereas nursing homes typically care for frail elders and establish short and long stay patient treatment plans, but do not focus on technology or the value of the JCAHO accreditation as extensively as hospitals. Secondly, the focus on patient safety and a good safety culture, to date, has primarily been on the acute inpatient setting.

Examining the resident safety culture in nursing homes may also be important simply because we have little information in this area. Despite changes in regulations, reporting systems and documentation over the past decade, the nursing-home industry still has its share of problems.[8] Resident safety concerns and negative outcomes of care received by residents have also gained attention in the past few years.[9–12] However, little empirical research has examined resident safety issues in nursing homes.

Examining safety culture may be an important first step in developing an understanding of resident safety in nursing homes. As Cooper[7] described, the safety culture of healthcare organisations is ''the most fundamental barrier to improving the safety of patient care''. From recent studies set in hospitals, we have some information that patient safety culture scores may represent safety performance indicators. Thus, a comparison between nursing homes and hospitals may give us valuable insight into the performance of nursing homes. In this research, we analyse the responses of nursing home administrators to a modified version of the Hospital Survey On Patient Safety Culture (HSOPSC). The purpose of this research was to (1) determine safety culture scores for nursing homes and (2) compare these results with existing data from hospitals using this instrument.

METHODS

Sample

The data used for this study were from a postal survey. In the spring of 2005, 4000 surveys were posted to nursing home administrators across the US. A total of 2840 were returned, giving a response rate of 71%.

We used the On-line Survey Certification and Recording (OSCAR) data to generate our sample. Nearly all facilities (about 97%) in the US report OSCAR data. Only uncertified facilities do not report these data, and these are considered uncharacteristic of most other nursing homes (eg, they cater only to private-pay residents).[13] OSCAR information used included mailing addresses and bed size. The address

Abbreviations: HSOPSC, Hospital Survey On Patient Safety Culture; JCAHO, Joint Commission on the Accreditation of Healthcare Organizations; OSCAR, On-line Survey Certification And Recording

information was used for mailing our surveys and number of beds, to exclude some facilities from the sample.

Facilities were randomly chosen within three strata based on county unemployment rates after excluding those that were licensed for <30 beds. This approach was used because one of the goals of the data collection initiative (not reported here) was to collect information on staff turnover. To establish a sample that reflected high and low turnover rates, we stratified the sample by county unemployment rates using information from the Bureau of Labor Statistics (http://www.bls.gov/cps/home.htm). We randomly chose a third of the sample from the bottom 10% tail of the unemployment distribution (<3.7% unemployment), a third from the top 10% tail (>8% unemployment) and a third from the middle 80%. Turnover measures are less reliable in small facilities; thus, facilities with <30 beds were excluded.

MEASURES

The survey included a section that asked questions coming from the HSOPSC. It is difficult to find a universal culture instrument in the literature on current assessments of patient safety culture.[14] This is especially so in the case of nursing homes. Therefore, we used the HSOPSC developed by the Agency for Healthcare Research and Quality in 2004.[15] This instrument contains subscales that consider many attributes known to be associated with a culture of patient safety, identified above.[7] Specifically, the subscales of the instrument include (1) manager expectations and actions promoting safety; (2) organisational learning; (3) teamwork within units; (4) communication openness; (5) feedback and communication about errors; (6) non-punitive response to errors; (7) staffing; (8) management support for patient safety; (9) teamwork across units; and (10) handoffs and transitions. The HSPOSC also includes two subscales that are presented as outcomes dimensions: (1) overall perceptions of safety; and (2) frequency of event reporting.

The HSOPSC is a valid and reliable instrument developed from previous literature, cognitive tests and factor analyses to assess the current state of patient safety in hospitals. Extensive details of the development and psychometric analyses of this instrument can be found in a web-based technical report.[16] The final instrument was pilot tested in 21 hospitals with 1419 employee responses. Using Cronbach's α, all subscales were shown to have acceptable levels of reliability, which varied from 0.84 for frequency of event reporting to 0.63 for staffing. The pilot test results are reported,[16] thereby allowing users to benchmark against previous hospital-based scores.

As we used this instrument in nursing homes, two modifications were made to the wording of items. Where it made sense the word ''hospital'' was replaced by ''nursing home'' and the word ''patient'' was replaced by ''resident''. No other changes were made to the instrument. The format, response options, and question order remained the same as in the original instrument.

Data analysis

We first calculated descriptive statistics for facilities in our sample. This included mean values for the facility characteristics and market characteristics. We also calculated descriptive statistics for each item on the HSOPSC. For each positively worded item, the percentage of positive responses was calculated—that is, the percentage of respondents answering the question as ''strongly agree'', and ''agree'' or ''always'' or ''most of the time''. In a similar way, for each negatively worded item, the percentage of negative responses was calculated. In addition, the mean for each subscale used (listed above) in the HSOPSC was calculated. Subscale scores were calculated by taking the average score of the subscale items. In all cases, the possible range of scores is from 0 to 100%, with higher scores indicating a more positive response. We used t tests to compare the nursing home item scores and subscale scores with the matching hospital scores.

Because this questionnaire has not been used previously in nursing homes, we also calculated Cronbach's α for each subscale. The HSOPSC instrument also includes questions asking respondents to give an overall grade to their safety environment and how many event reports have been reported in the past 12 months. The responses to these questions are summarised below.

RESULTS

A total of 2840 surveys were returned (response rate of 71%); however, 123 respondents did not complete the HSOPSC. Therefore, our analytical sample consisted of 2717 respondents.

Table 1 displays the descriptive statistics of the nursing homes in this sample. For example, the average yearly turnover rates for nurse aides, licensed practical nurses and registered nurses were 45%, 40% and 33%, respectively. Table 1 also displays market characteristics. For example, we found 18% of the nursing homes in our sample to be in rural locations. Except for number of beds, our sample is not significantly different from the National Nursing Home Survey on the facility characteristics (not shown). Our sample has a higher number of beds, but this would be expected given our sampling approach of excluding facilities with <30 beds. Compared with information from the Area Resource File, the market characteristics were also not significantly different from national averages (not shown). This gives us some confidence that our nursing home sample is nationally representative.

Table 2 displays our results from the HSOPSC. We calculated the mean score and standard deviation for the nursing homes in our sample and presented them next to the established HSOPSC benchmarks. The HSOPSC benchmarks were higher than our nursing home scores on all patient safety subscales, with the exception of the subscale entitled teamwork across units. The nursing home score was higher by 2% (ie, 55% *v* 53%). The most drastic difference in scores occurred on the organizational learning and teamwork within units subscale. For this subscale, our nursing home sample was found be 47% lower than the HOSPSC benchmark (ie, 24% *v* 71%).

One subscale of the HSOPSC (management expectations and actions promoting patient safety) was answered only by 61% (n = 1737) of nursing home administrators. This may be

Table 1 Descriptive statistics of nursing home sample

Characteristic	% or mean (SD)
Facility characteristics of nursing homes*	
Average yearly NA turnover rate	45 (18)
Average yearly LPN turnover rate	40 (11)
Average yearly RN turnover rate	33 (17)
FTE NAs per 100 residents	25.3 (8.6)
FTE LPNs per 100 residents	11.2 (9.4)
FTE RNs per 100 residents	8.5 (8.1)
Number of beds	137 (81)
For-profit	49%
Member of a chain	32%
Average occupancy	93% (7)
Average private-pay occupancy	16% (13)
Case mix (ADLs)	2.6 (0.9)
Market characteristics†	
Rural location	18%
Average unemployment rate in county	6.3 (1.8)
Number of nursing homes in county	18 (14)

ADLs, activities of daily living; FTE, full-time equivalent; LPN, licensed practical nurse; NA, nurse aide; RN, registered nurse.
*n = 2717.

Table 2 Descriptive statistics of survey on patient safety culture and benchmark scores

Subscales and survey items	Nursing home score† (SD)	Benchmark score†
1. Overall perceptions of safety (Cronbach's α =0.78)	*39 (12)*	*56**
a. Resident safety is never sacrificed to get more work done	42 (11)	50*
b. Our procedures and systems are good at preventing errors from happening	41 (12)	*67**
c. It is just by chance that more serious mistakes don't happen around here	36 (15)	*56**
d. We have patient safety problems in this facility (R)	38 (14)	*53**
2. Frequency of events reported (Cronbach's α =0.71)	*31 (12)*	*52**
a. When a mistake is made, but is caught and corrected before affecting the resident, how often is this reported?	40 (11)	43
b. When a mistake is made, but has no potential to harm the resident, how often is this reported?	13 (16)	*42**
c. When a mistake is made that could harm the resident, but does not, how often is this reported?	28 (14)	*71**
3. Management Expectations and Actions Promoting Patient Safety (Cronbach's α =0.62)	*50 (11)*	*71**
a. Management says a good word when he/she sees a job done according to established resident safety procedures	37 (14)	*63**
b. Management seriously considers staff suggestions for improving resident safety	66 (9)	68
c. Whenever pressure builds up, my manager wants us to work faster, even if it means taking shortcuts (R)	55 (8)	*72**
d. My manager overlooks resident safety problems that happen over and over (R)	46 (12)	*77**
4. Organizational learning (Cronbach's α =0.77)	*24 (14)*	*71**
a. We are actively doing things to improve resident safety	21 (16)	*78**
b. Mistakes have led to positive changes here	27 (14)	*68**
c. After we make changes to improve resident safety, we evaluate their effectiveness	23 (11)	*68**
5. Teamwork within units (Cronbach's α =0.80)	*27 (12)*	*74**
a. People support one another between units	37 (13)	*84**
b. When a lot of work needs to be done quickly, we work together as a team to get the work done	33 (12)	*81**
c. In all units, people treat each other with respect	24 (10)	*72**
d. When one area in this unit gets really busy, others help out	21 (9)	*59**
6. Communication openness (Cronbach's α =0.71)	*27 (12)*	*61**
a. Staff will freely speak up if they see something that may negatively affect resident care	46 (12)	*72**
b. Staff feel free to question the decisions or actions of those with more authority	15 (14)	*43**
c. Staff are afraid to ask questions when something does not seem right (R)	23 (12)	*65**
7. Feedback and communication about error (Cronbach's α =0.70)	*38 (13)*	*52**
a. We are given feedback about changes put into place based on event reports	35 (11)	*48**
b. We are informed about errors that happen in the units	45 (9)	*52**
c. In this facility, we discuss ways to prevent errors from happening again	15 (16)	*58**
8. Non-punitive response to error (Cronbach's α =0.72)	*34 (12)*	*43**
a. Staff feel like their mistakes are held against them (R)	28 (14)	*47**
b. When an event is reported, it feels like the person is being written up, not the problem (R)	21 (12)	*47**
c. Staff worry that mistakes they make are kept in their personnel file (R)	42 (10)	*33**
9. Staffing (Cronbach's α =0.81)	*21 (12)*	*50**
a. We have enough staff to handle the workload	22 (11)	*40**
b. Staff in this facility work longer hours than is best for resident care	23 (15)	*54**
c. We use more agency/temporary staff than is best for resident care	17 (13)	*67**
d. We work in "crisis mode" trying to do too much, too quickly (R)	21 (10)	*37**
10. Management support for resident safety (Cronbach's α =0.66)	*40 (12)*	*60**
a. Management provides a work climate that promotes resident safety	42 (11)	*72**
b. The actions of management show that resident safety is a top priority	39 (12)	*60**
c. Management seems interested in resident safety only after an adverse event happens	38 (14)	*49**
11. Teamwork across units (Cronbach's α =0.74)	*55 (11)*	*53*
a. There is good cooperation among units that need to work together	62 (10)	*54**
b. Units work well together to provide the best care for residents	57 (9)	*59*
c. Units do not coordinate well with each other (R)	48 (12)	*41**
d. It is often unpleasant to work with staff from other units (R)	55 (10)	*57*
12. Handoffs and transitions (Cronbach's α =0.75)	*27 (14)*	*45**
a. Things "fall between the cracks" when transferring residents from one unit to another (R)	36 (12)	*42**
b. Important resident care information is often lost during shift changes (R)	15 (15)	*58**
c. Problems often occur in the exchange of information across units (R)	32 (14)	*38**
d. Shift changes are problematic for residents in this facility (R)	16 (17)	*42**

n=2717.
R= item was reverse coded, so for all questions higher scores are more favourable.
*Significantly different t test at $p<0.05$ (using same standard for both primary data and benchmark scores).
†The scales used for the questions were (1) strongly disagree, disagree, neither, agree and strongly agree; and (2) never, rarely, sometimes, most of the time and always. For each positively worded item, the percentage of positive responses was calculated—that is, the percentage of respondents answering the question as strongly agree and agree, or always or most of the time. In a similar way, for each negatively worded item, the percentage of negative responses was calculated.

because in many nursing homes (except chain facilities) the administrator has no supervisor.

The HSOPSC also includes questions asking respondents to grade their safety performance and give the number of events reported in the past 12 months. Table 3 shows these items. Most respondents (ie, 39%) graded their own resident safety performance as acceptable. The median number of resident safety events reported in the past 12 months was 6–10.

DISCUSSION

Our results show that acute inpatient settings have a safer culture than nursing homes. This claim is supported by the large differences in scores for the organisational learning dimension of the HSOPSC. The questions asked in this subscale include actively working to improve resident safety, seeing positive changes as a result of a mistake, and evaluating effectiveness after implementing change. The nursing homes sampled differ from the hospitals by scores of 57%, 41% and 45%, respectively.

Although we find it encouraging that nursing home administrators self-report that they are open to staff suggestions on how to improve resident safety in nursing homes (ie, question 3.2 (Management seriously considers staff suggestions for improving resident safety), with a score of 66%), the good intentions seem to go no further. Our results show dissatisfaction with the number of staff (ie,

Table 3 Descriptive statistics of overall grade on patient safety culture and number of events reported

Overall grade on resident safety*	
A (excellent)	7.5% (205)
B (very good)	15% (417)
C (acceptable)	39% (1062)
D (poor)	30.5% (828)
E (failing)	7.5% (205)
Resident safety event reports (of any kind) to you in the past 12 months*	
None	4% (118)
1–2	32% (872)
3–5	27.5% (747)
6–10	30% (805)
11–20	6% (175)
⩾21	0% (0)

*Results do not total 100% owing to rounding error.
n given in parentheses.
Sample n = 2717.

question 9.1, with a score of 22%), high agency usage (ie, question 9.3, with a score of 17%) and loss of resident information during a transfer (ie, question 12.2, with a score of 15%) to be serious issues that can affect the safety of residents. The combination of these scores, along with the organisational learning scores, seems to indicate that leaders are concerned about the safety of nursing home residents, but action is not being taken to improve resident safety.

The results of table 3 also indicate that there is much room for improvement. About 70% of respondents reported a grade of C (acceptable) or D (poor). We find it disheartening that only 7.5% were able to say that safety was at a level that would be considered excellent. With regard to reporting events, more than one third of respondents experienced at least six safety events in the past year. Despite the attention drawn to resident safety by the media and accrediting bodies,[6] residents of nursing homes are at risk of harm.

On the basis of these findings, patient safety improvement efforts may be warranted in many nursing homes. As such, patient safety culture survey instruments (such as the HSOPSC) may be of some use. They can be used, for example, to evaluate the success of patient safety interventions or to identify areas for improvement. The success of the Veterans Health Administration in developing a culture of patient safety may serve as a model for nursing homes.[17] Nursing home administrators could also take cues from the quality improvement initiatives currently implemented in hospitals—for example, the establishment of hospital safety and quality improvement teams.

Government regulatory bodies have drawn attention to the idea of what constitutes patient safety via public dissemination of information. Currently, hospitals may have to report to a patient safety authority, and patients and families can compare hospitals on the Centers for Medicare and Medicaid Services website. Nursing Home Compare,[18] a report card for nursing homes, could likewise include patient safety measures.

Nevertheless, the use of the HSOPSC is not without limitations. The HSOPSC instrument was validated in hospital settings and not in nursing homes.[16 19] Thus, some bias may exist because of modifying this instrument for use in nursing homes. We believe this instrument worked as intended (with the previously noted exception of the management expectations and the actions promoting patient safety subscales) and was sensitive to the nursing home setting. However, our nursing home data were only from administrators. Some caution may be required if this instrument is to be used with care givers, such as nurse aides. These care givers generally have lower education levels than administrators and could find some of the HSOPSC questions difficult to understand. The instrument is also long, which may further increase the burden on care givers. Further research is needed to determine whether the HSOPSC should be further modified or whether an instrument specifically for use in nursing homes should be developed.

CONCLUSION

In general, the scores reported by nursing homes are low across most questions and most subscales. This indicates that there is room for improvement in all of the areas listed on the HOSPSC. We found that use of the HOSPSC in the nursing homes setting had some utility. It has presented a snapshot of the opinions of nursing home administrators on patient safety in the industry. There is clearly much work to be done to improve the quality and safety of nursing home residents.

Authors' affiliations
N G Castle, K E Sonon, Crabtree Hall, Graduate School of Public Health, Pittsburgh, Pennsylvania, USA

Competing interests: None.

REFERENCES

1 **Institute of Medicine**. Patient Safety. Washington, DC: National Academy Press, 2004.
2 **Kohn KT**, Corrigan JM, Donaldson MS. *To err is human: building a safer health system*. Washington, DC: National Academy Press, 1999.
3 **Milstein A**, Galvin RS, Delbanco SF, *et al*. Improving the safety of health care: the leapfrog initiative. *Effect Clin Pract* 2000;**3**:313–16.
4 **Devers KJ**, Pham HH, Liu G. What is driving hospitals' patient-safety efforts? *Health Affairs* 2004;**23**:103–15.
5 **Wachter RM**. The end of the beginning: patient safety five years after 'To Err Is Human.' Health Affairs: http://content.healthaffairs.org/cgi/reprint/hlthaff.w4.534v1?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&author1=wachter&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT (accessed 10 Oct 2006).
6 **Leape LL**, Berwick DM. Five years after to err is human: what have we learned? *J Am Med Assoc* 2005;**293**:2384–90.
7 **Cooper JB**. Developing a culture of safety. *Biomed Instr Technol* 2003;**37**:212–14.
8 **Institute of Medicine**. *Improving the quality of long-term care*. Washington, DC: National Academy Press, 2001.
9 **Berlowitz DR**, Young GJ, Hickey EC, *et al*. Quality improvement implementation in the nursing home. *Health Serv Res* 2003;**38**:65–83.
10 **Gregg EW**, Pereira MA, Caspersen CJ. Physical activity, falls and fractures among older adults: a review of the epidemiologic evidence. *J Am Geriatr Soc* 2000;**48**:883–93.
11 **Hantikainen V**, Käppeli S. Using restraint and nursing home residents: a qualitative study of nursing staff perceptions and decision-making. *J Adv Nursing* 2000;**32**:1196–205.
12 **Rubenstein LZ**, Josephson KR, Robbins AS. Falls in the nursing home. *Ann Intern Med* 1994;**121**:442–51.
13 **Castle NG**, Engberg J. Staff turnover and quality of care in nursing homes. *Med Care* 2005;**43**:616–26.
14 **Colla JB**, Bracken AC, Kinney LM, *et al*. Measuring patient safety climate: a review of surveys. *Qual Saf Health Care* 2005;**14**:364–6.
15 **Nieva VF**, Sorra J. Safety culture assessment: a tool for improving patient safety in healthcare organizations. *Qual Saf Health Care* 2003;**12**(Suppl II):S17–23.
16 **Agency for Healthcare Research**, Quality (AHRQ). Comparing your results: preliminary benchmarks on the Hospital Survey on Patient Culture (HSOPC). 2005. www.ahcpr.gov/qual/hospculture/hospapps.htm(accessed 06 Sep 2006).
17 **Weeks WB**, Bagian JP. Developing a culture of safety in the Veterans Health Administration. *Effect Clin Pract* 2000;**3**:270–6.
18 **General Accounting Office**. *Nursing homes: public reporting of quality indicators has merit, but national implementation is premature*. Washington, DC: General Accounting Office, 2002.
19 **Sorra JS**, Nieva VF. *Hospital survey on patient culture*. Rockville, MD: Agency for Healthcare Research and Quality, September 2004, Report No: AHRQ Publication No. 04-, 0041.